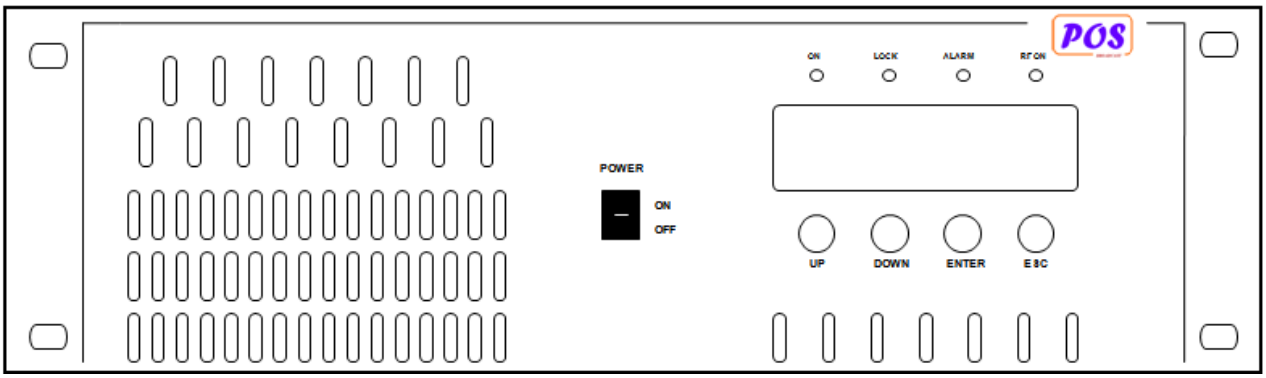
POS-1000A+



User Manual

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1. General Description

The POS-1000A+ is an FM amplifier for Frequency in the band between 87.5 and 108 MHz and output RF power adjustable up to a maximum of 1000 W

The POS-1000A+ was designed to be modular. Its various functions are run from modules directly connected to each other with male and female connectors or with flat cables ending in connectors. This type of design makes maintenance operations and any required module replacement easier. All models are made with SMD technology.

This amplifier contains a low-pass filter that reduces the harmonic emissions to below the limits allowed by international regulations, and can therefore be used as a transmitter connected directly to the antenna.

The microprocessor system includes an LCD display and push-button panel for inter action with the user, and implements the following functions:

- Setting the output power
- Measurement and display of the working parameters of the amplifier

The amplifier's management software is based on a menu system. The user can navigate between the various submenus by using four push buttons: UP, DOWN, ENTER and ESC.

2. Installation and use Description

This chapter contains the necessary information for installing and using the machine. In the event any aspects are not completely clear, for example when using the machine for the first time, we recommend you carefully read the entire description contained in this manual.

2.1 Preparation

Unpack the amplifier and before doing any other operation, be sure it has not been damaged during transport. In particular check that all the connectors are in perfect condition.

The main fuse can be accessed from the outside on the rear panel. Extract the fuse carrier with a screwdriver to check its integrity or for replacement, if necessary. The fuse to be used is this type 20A @220VAC

Check that the POS-1000A+ switches are in the "OFF" position. The amplifier has one switch for the mains power supply cable and completely interrupts the machine's mains power supply.

Connect the RF output of the amplifier to the antenna cable or to a fictitious load 50 ohm.

Connect the RF input of the amplifier to the RF output from exciter.

Connect the mains cable.

Connect the earth cable.

2.2 Use

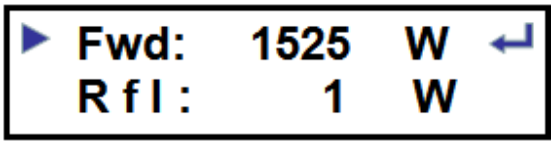
Check that the POS-1000A+ switches are in the "ON" position.

Set the desired power level from the LCD menu.

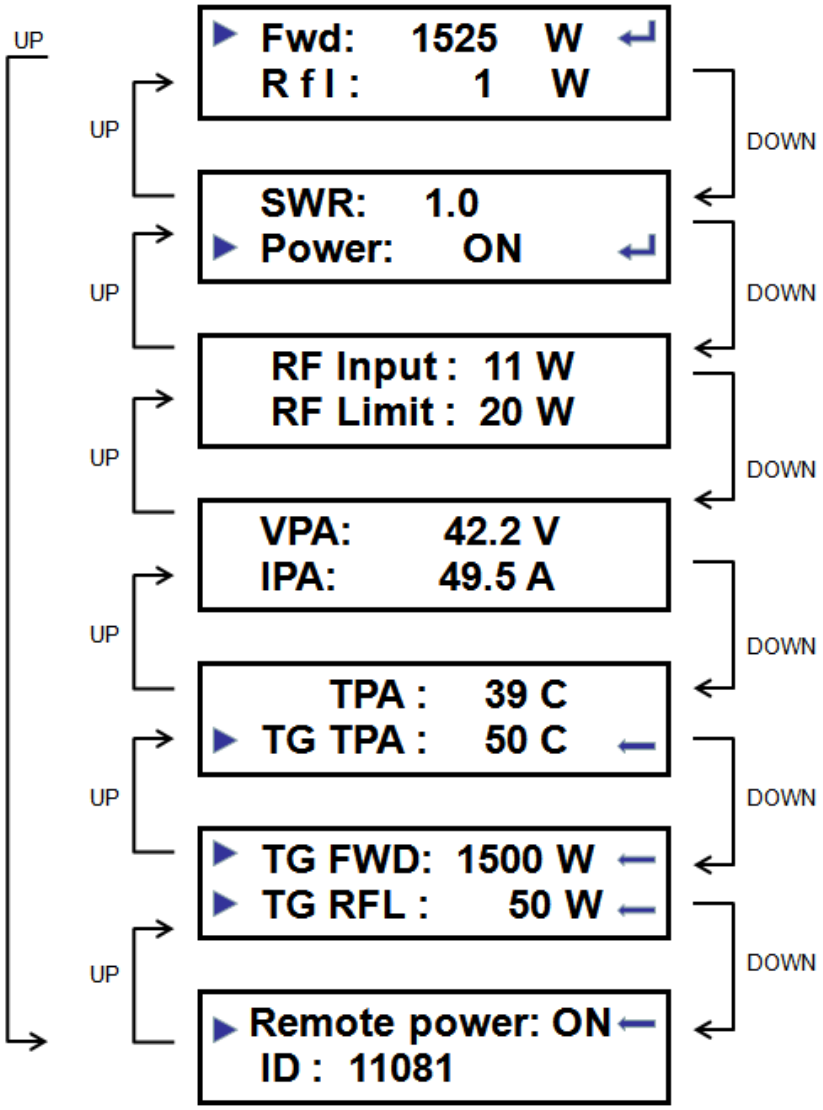
2.3 Front panel control

The machine is provided with a two-line LCD display where a set of menus is shown

When turned on, the LCD display shows the predefined screen with the graphic representation of the output power level and reflect output power level:

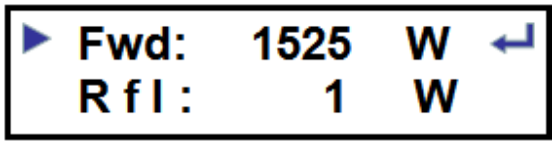


To change the menu display, select the UP or DOWN push button, the screen that is shown in following:

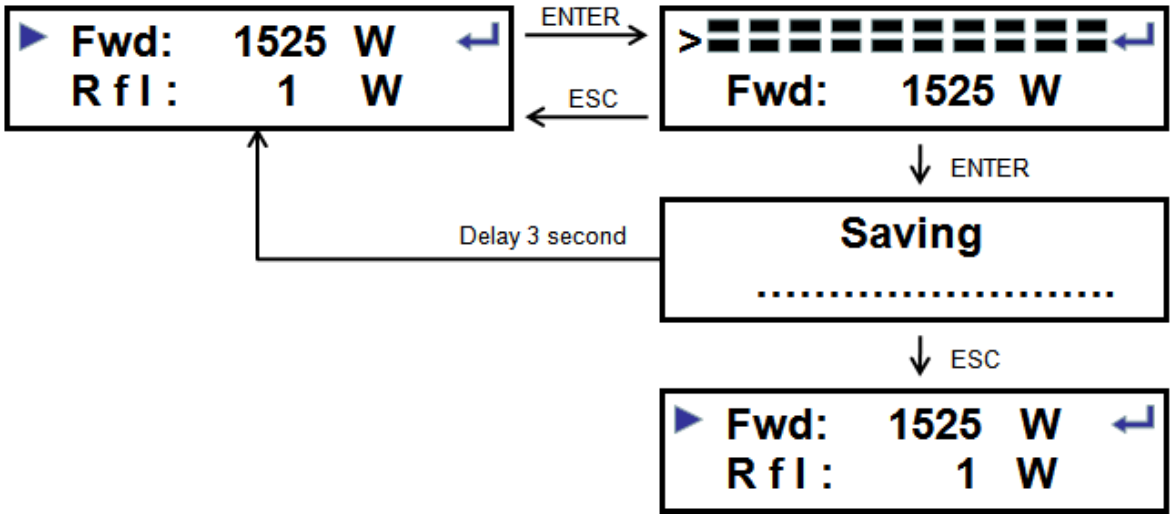


2.3.1 Power setting

To change the set power level, select the menu power as below,



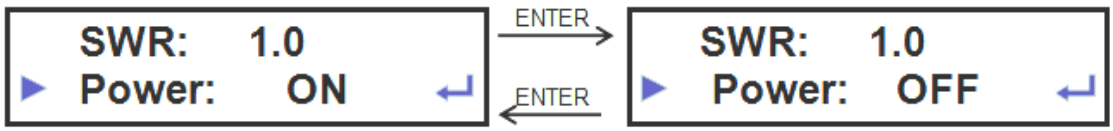
Keep the ENTER push button. The screen that is show in the modification mode is similar to the following:



To increase the level, press the UP push button and to reduce it, press DOWN. As the set level increases or decreases, the bar becomes longer or shorter to display the current setting. When the designed level is reached, press ENTER to confirm and exit the predefined menu.

2.3.1 RF Power ON/OFF

To change the RF power ON or OFF, select the menu power as below,



2.4 Software control

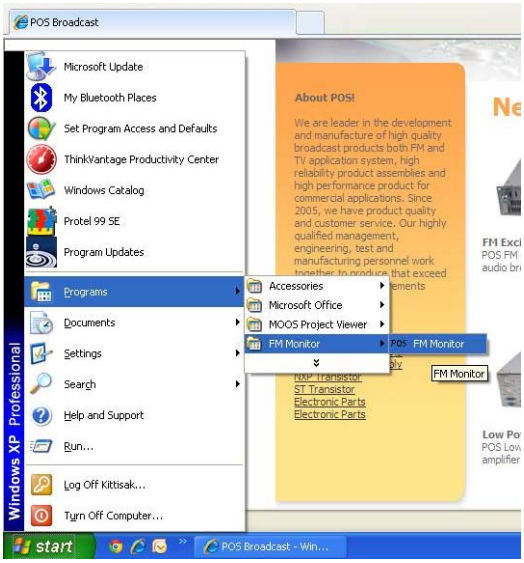
2.4.1 Software installation

To get the software, you can get software by CD Rom or download from www.posbroadcast.com.

Then, you can easy installation software on your computer.(refer to Window application)

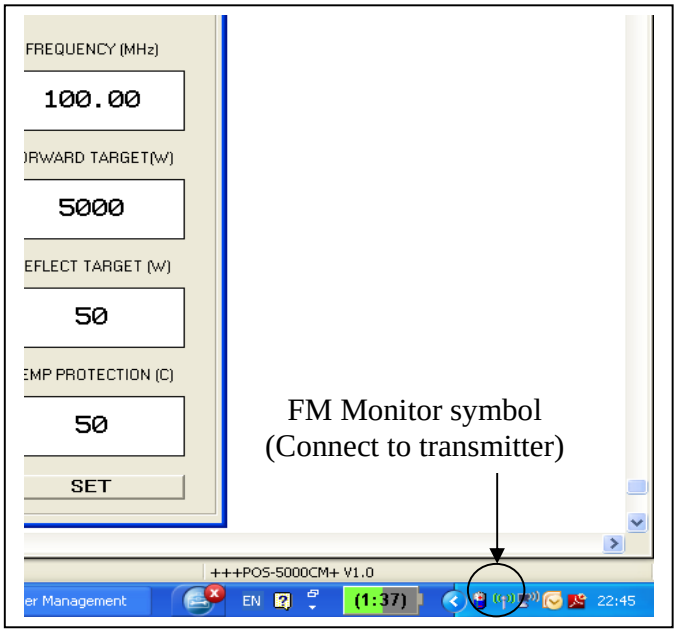
2.4.2 Software monitor

When, you connect to the transmission via RS232 port and turn on, you can open the software by the ways as

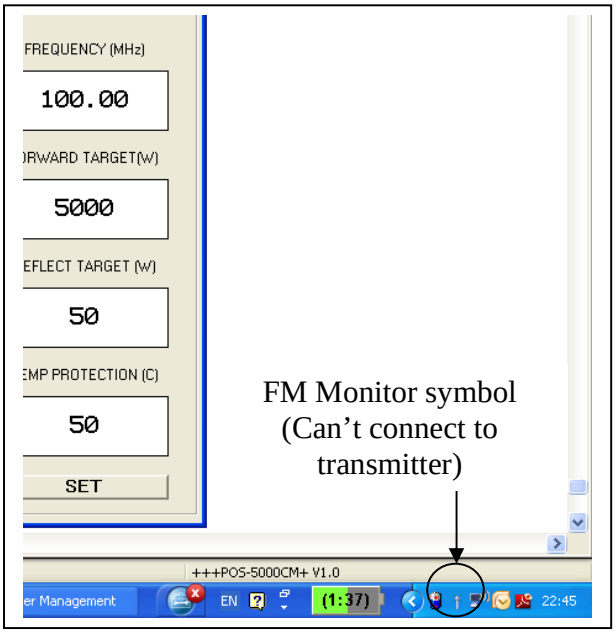


After click open the software FM Monitor, you can get the symbol on bottom-right on your computer.

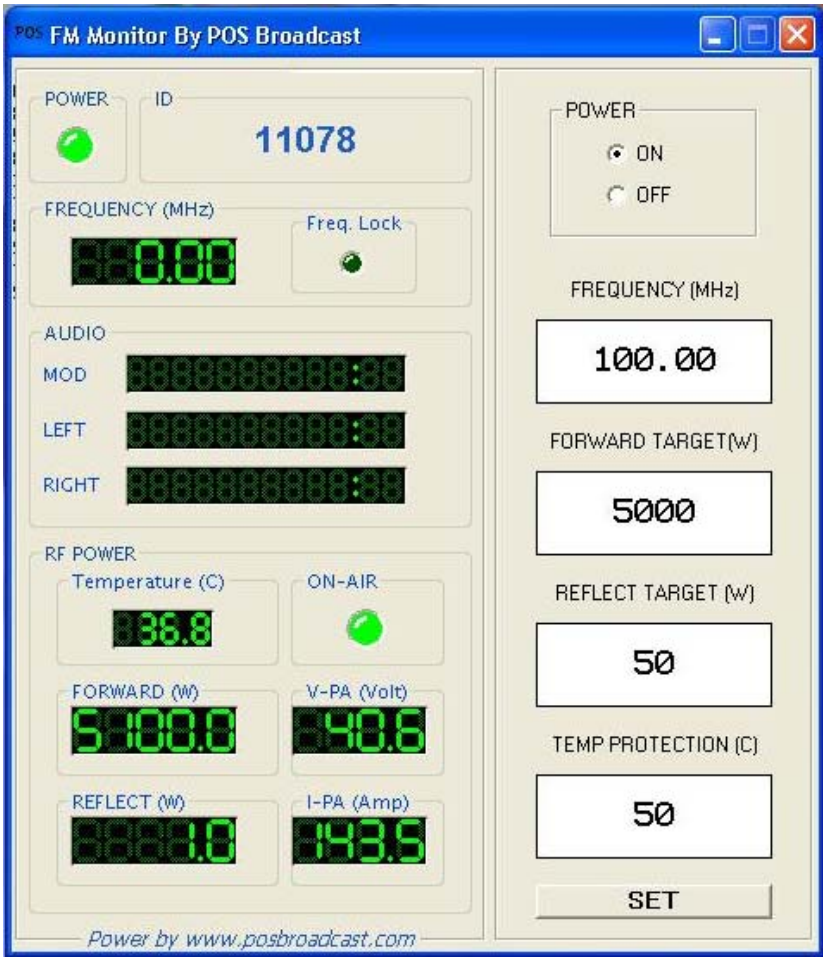
Connected to transmitter



Can not connected to transmitter



Double click on the FM Monitor symbol; the software will be show as

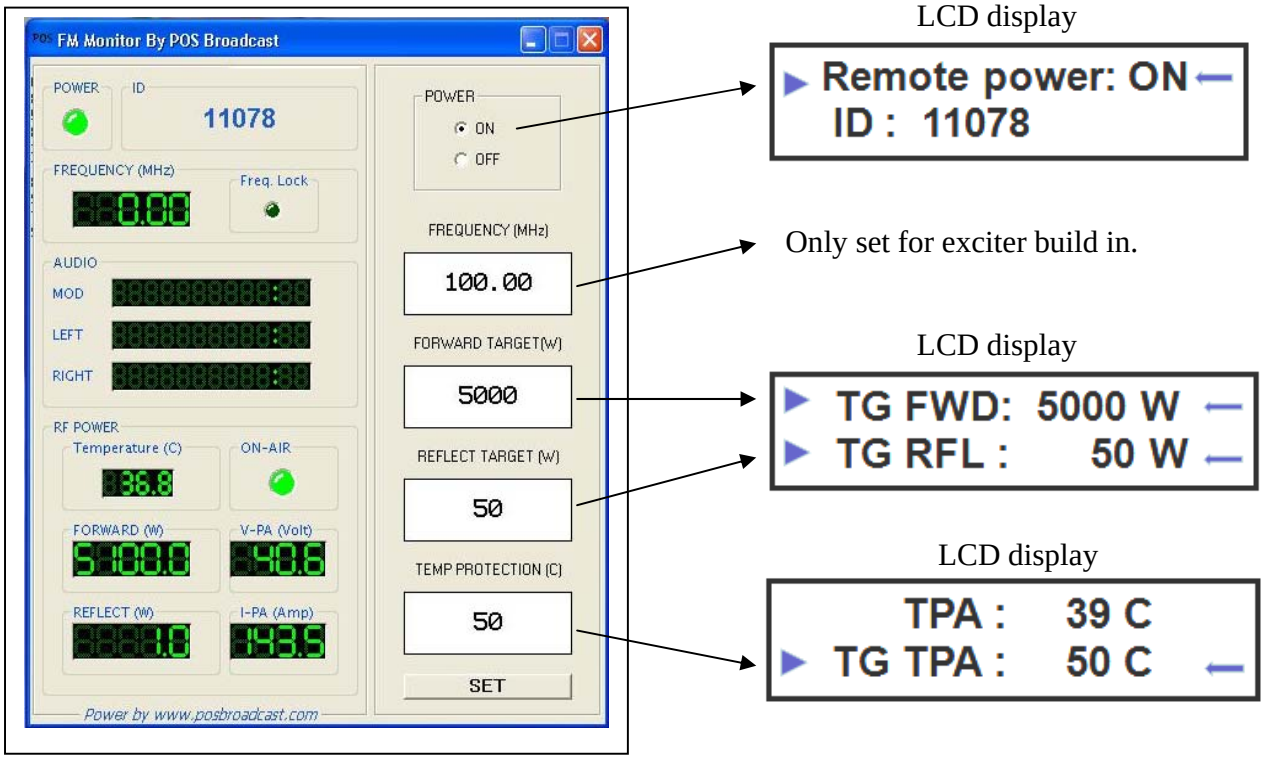


2.4.3 Software configuration

You can set the value as you're requested. Then click SET, The parameter will be show and change on LCD of the transmission.

- Power set > ON, the RF output of transmission is on.
  OFF, the RF output of transmission is standby.
- Frequency set > only for build in exciter model.
- Forward target set > the values for RF output of transmission limit.
- Reflect target set > the values for maximum RF power reflect of transmission protection limit.
- Temp protection set > the values for maximum temperature of transmission protection limit.

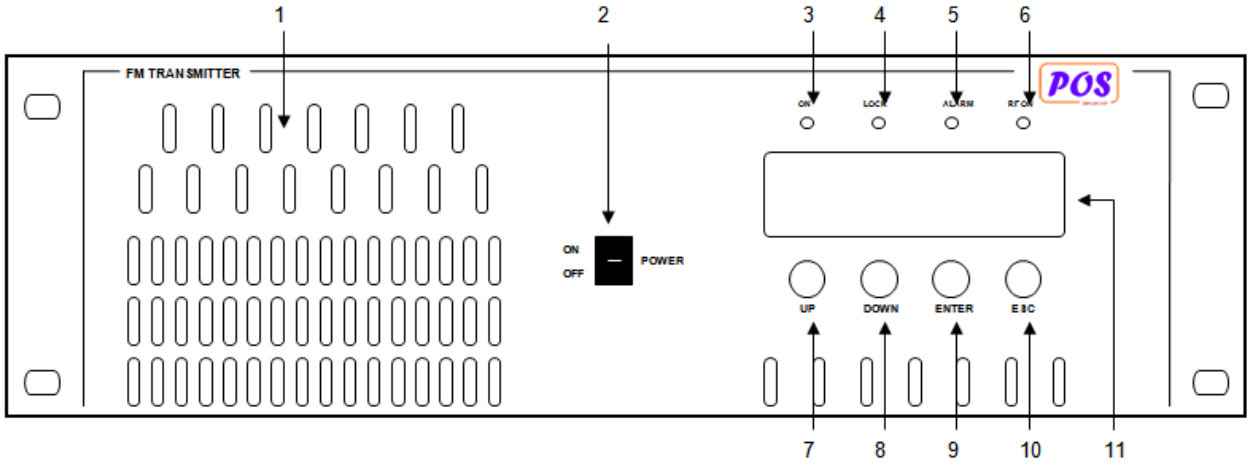
The value from software FM Monitor should be related to LCD of transmission



3. External Description

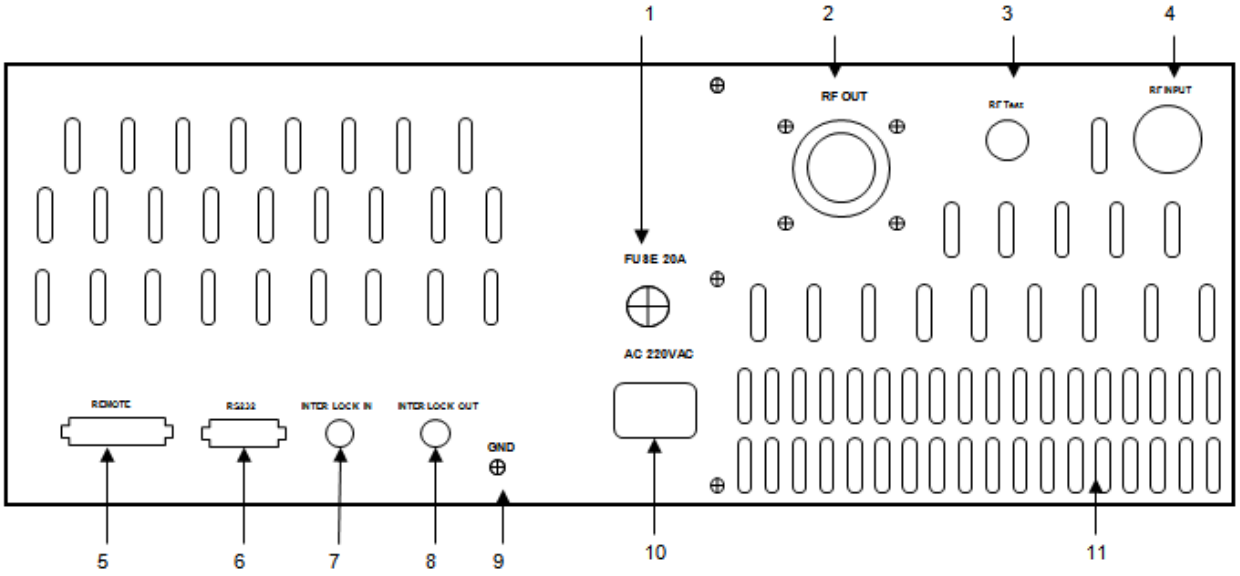
This chapter reports the elements of the front and rear panels of the POS-1000A+ with a brief description of each of them.

3.1 Front Panel



[1] AIR FLOW	Grid for the intake of the air flow of the forced ventilation
[2] POWER	ON/OFF switch. This switch disables the amplifier without disconnecting the mains supply
[3] ON	Green LED, light when the amplifier is working
[4] LOCK	Not used for this transmitter
[5] ALARM	Red LED, light when the alarm function is operating (Low power, high reflect power, high SWR or high temperature)
[6] RF ON	Green LED, light when the amplifier's power output is on.
[7] UP	Push button to increase value.
[8] DOWN	Push button to decrease value.
[9] ENTER	Push button to confirm a parameter.
[10] ESC	Push button to exit from a menu.
[11] DISPLAY	Liquid crystals display

3.2 Rear Panel

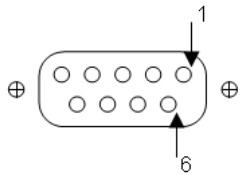


[1] AC FUSE1	Fuse holder. Use a turn to access the fuse Contains the general protection fuse rated 20 A@220VAC RF TEST
[2] RF OUTPUT	RF output connector, 7/16-type female, 50Ω.
[3] RF TEST	RF output, approx. -60 dB of the RF output power level
[4] RF INPUT	RF input connector N -type, 50Ω for RF input from exciter
[5] REMOTE	DB15 connector for telemetry of the machine.
[6] RS232	DB9 connector for interconnection with other devices and for parameters programming
[7] INTERLOCK IN	BNC interlock in connector: the amplifier is forced in stand-by mode when the inner conductor is grounded.
[8] INTERLOCK OUT	BNC interlock out connector: the inner short to ground when Power OFF.
[9] GND	Ground of amplifier, connect to earth
[10] AC INPUT	Mains supply, 180 - 240V 50-60 Hz
[11] AIR FLOW	Grid for the intake of the air flow of the forced ventilation

3.3 Connector Description

3.3.1 RS 232

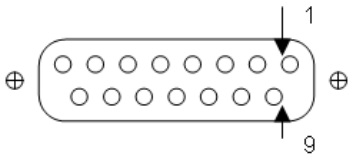
Type: DB9 female



1	GND
2	TX
3	RX
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

3.3.2 Remote

Type: DB15 female



1	INTERLOCK IN	9	INTERLOCK OUT
2	Frequency lock	10	NC
3	GND	11	GND
4	GND	12	GND
5	NC	13	Modulation level
6	Forward	14	PA temperature
7	Reflect	15	PA current
8	PA voltage		

4. Technical Specifications

4.1 Physical specifications

Panel size	483 mm (19”) x 134 mm (5 1/4”) (3U)
Depth	610 mm (24”)
Weight	32 Kg
Working Temperature	0 °C ÷ 50 °C

4.2 Electrical specifications

General

RF output power	0 to 1000 W, adjustable
RF output connector	7/16 type female
RF output impedance	50 Ohm
Frequency range	87.5 MHz ÷ 108 MHz
Harmonics suppression	> -65 dBc
A.C. power supply	≅ 180 V ÷ 240 V
Power consumption	1600 VA

Input

RF input power requirement	< 15 W
RF input connector	N – type Female
RF input impedance	50 Ohm

Output

RF Out	7/16 type female, 50 Ohm
RF test	BNC connector, -60 dB.

Connections

Interlock connector	2 BNC
Serial interface	DB9 female RS232
Remote	DB15 female

5. Working Principles

5.1 Power Supply

POS-1000A+ power supply is a switching type of unit, and its main 12V 8A and 48 V 32A output feeds the RF amplifier and regulate broad of the machine. The power supply is connected to voltage between 180 and 240 V without having to make adjustments or manual settings.

5.2 Regulate Board

The regulate board for generating continuous 5 V and 12 V voltages for powering the other circuits on the device are present on the power supply.

5.3 LCD Board

The LCD board contains the microcontroller (PIC18F458) that implements the machine's control software, the display and the other components needed to interface the user. The board interfaces with the other machine modules, both for power supply distribution and for the control and measures.

5.4 Fuse Board

The fuse board contains the fuse, current, temperature and voltage sensor. The board interfaces with the other machine modules, both for power supply, power amplifier and for the control. This circuit carries out the following functions:

- Measures current and voltage
- Measures temperature

5.5 Control Board

The control board contains the measure and control parameter (forward, reflect, voltage, current, temperature, bias etc.). The board interfaces with the other machine modules, both for LCD and power amplifier board.

5.6 Interface Board

The interface board needed to interface from LCD board and external machine for setup or monitoring.

5.7 Coupler Power Input Board

This board contains the power input measures from the exciter. The board interfaces to the LCD board.

5.8 Power Amplifier Board

The final power stage is enclosed in a totally shielded metal container fastened in the centre of the device. The RF signal coming from the exciter sent to the splitter, amplifier, combiner, low pass filter and directional coupler stage that sees to its final amplifications up to 1000W.The amplifier is made in three modules. Every RF module supplied up to 350W.This active device used in amplifier module is a Mosfet (SD2942). These amplifier modules combine with Wilkinson Splitter and Combiner in strip line.

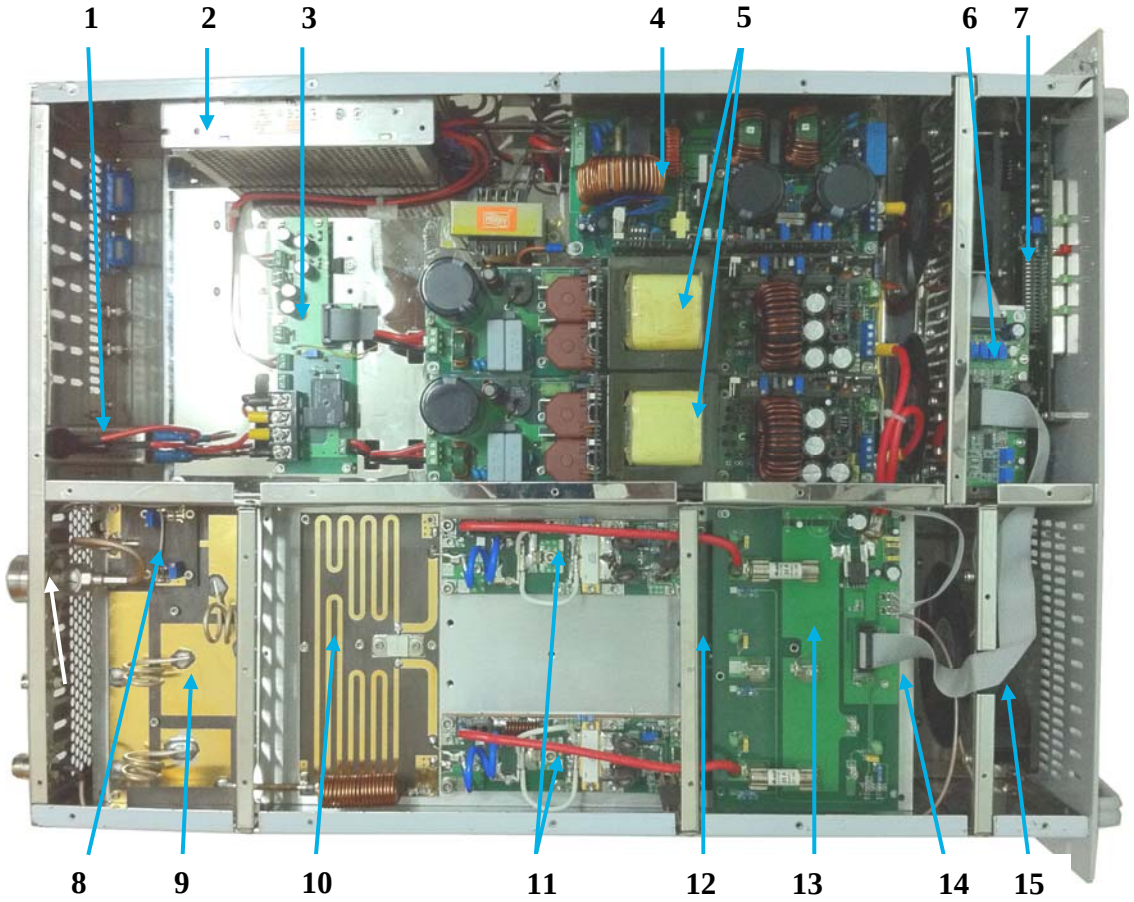
5.9 LPF Board

This board is mean Low Pass Filter (LPF) is function is to suppress the harmonic components generate by the amplifier below the level required by regulations. This board includes a direction coupler, is function is the measurement of the forward, reflect output power and RF sample at –60dB.

6. Internal Description

6.1 Top view

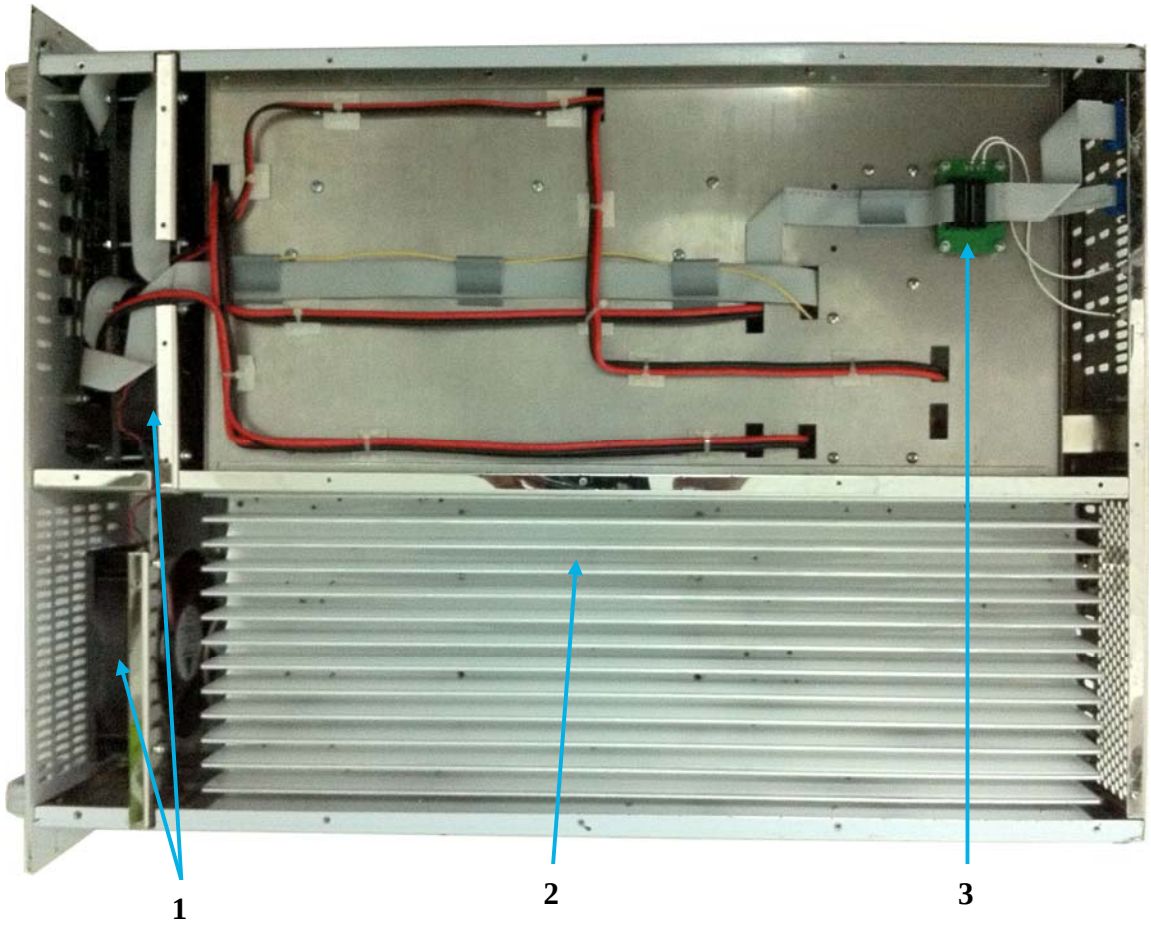
The figure below shows the view from above the machine,



1. Noise filter
2. Power supply 12V 8A
3. Regulate board
4. Power factor correction unit
5. Power supply unit 32A @48V
6. Control board
7. LCD board
8. Directional coupler
9. Low Pass Filter
10. Power Combiner
11. Power amplifier (SD2942 X 3)
12. Power Splitter
13. Fuse board
14. Coupler power input board
15. Blower

6.2 Bottom view

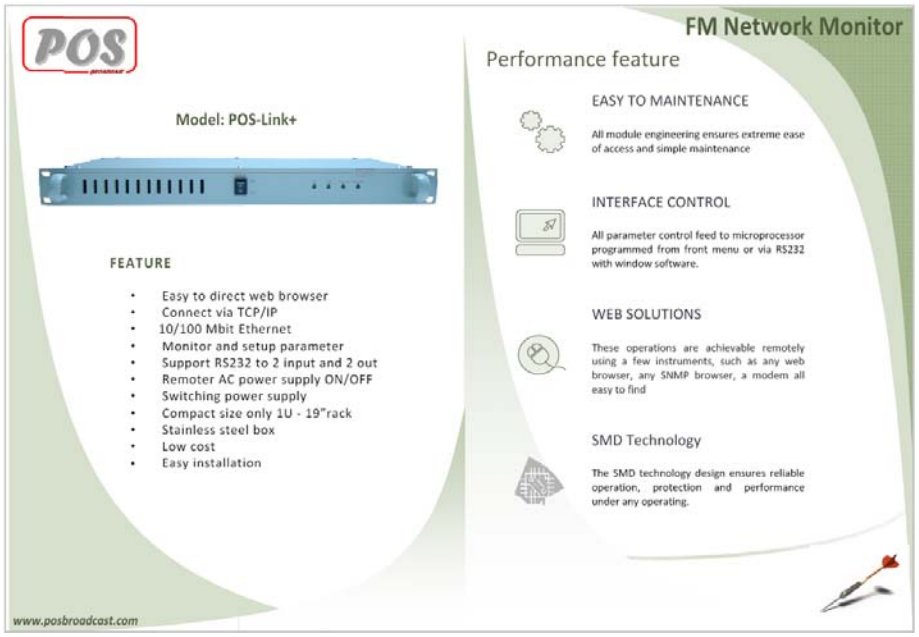
The figure below shows the view from bottom the machine,

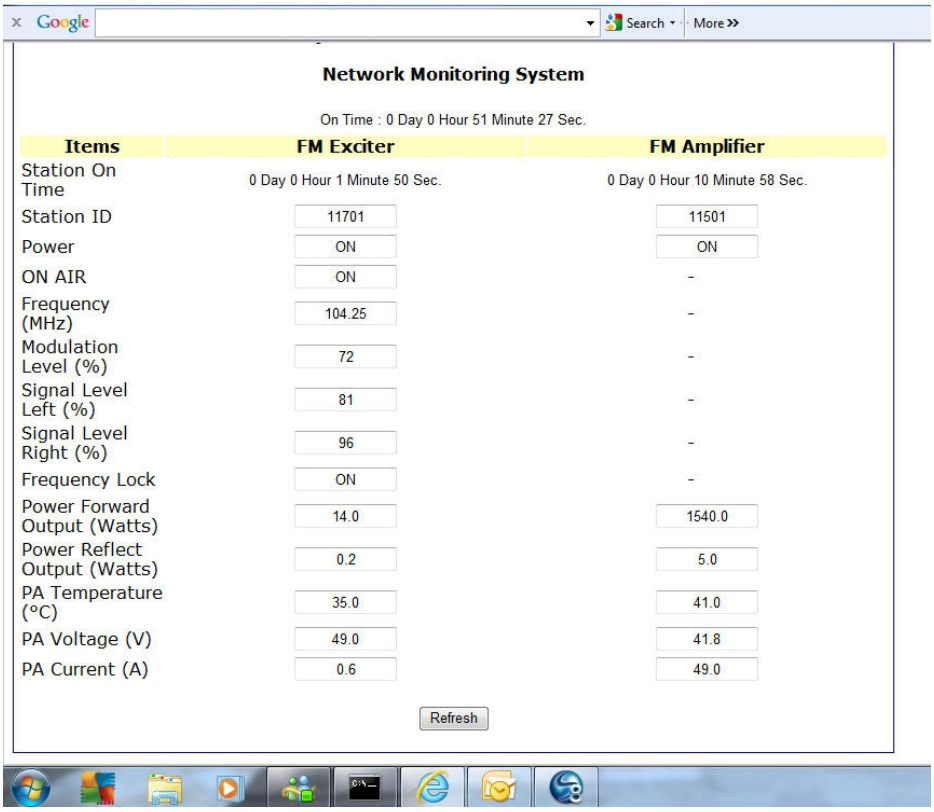


1. Blower
2. Heat sink
3. Interface board

7. Web browser application

You can monitor and configuration all parameter to transmitter via web browser. It easy to connect anywhere and update status your transmitter. Please see application on www.posbroadcast.com/telemetry


FM Network Monitor
Performance feature
Model: POS-Link+
FEATURE
Easy to direct web browser
Connect via TCP/IP
10/100 Mbit Ethernet
Monitor and setup parameter
Support RS232 to 2 input and 2 out
Remoter AC power supply ON/OFF
Switching power supply
Compact size only 1U - 19"rack
Stainless steel box
Low cost
Easy installation
EASY TO MAINTENANCE
All module engineering ensures extreme ease of access and simple maintenance
INTERFACE CONTROL
All parameter control feed to microprocessor programmed from front menu or via RS232 with window software.
WEB SOLUTIONS
These operations are achievable remotely using a few instruments, such as any web browser, any SNMP browser, a modem all easy to find
SMD Technology
The SMD technology design ensures reliable operation, protection and performance under any operating.
www.posbroadcast.com



Network Monitoring System

On Time : 0 Day 0 Hour 51 Minute 27 Sec.

Items	FM Exciter	FM Amplifier
Station On Time	0 Day 0 Hour 1 Minute 50 Sec.	0 Day 0 Hour 10 Minute 58 Sec.
Station ID	11701	11501
Power	ON	ON
ON AIR	ON	-
Frequency (MHz)	104.25	-
Modulation Level (%)	72	-
Signal Level Left (%)	81	-
Signal Level Right (%)	96	-
Frequency Lock	ON	-
Power Forward Output (Watts)	14.0	1540.0
Power Reflect Output (Watts)	0.2	5.0
PA Temperature (°C)	35.0	41.0
PA Voltage (V)	49.0	41.8
PA Current (A)	0.6	49.0

Refresh